

Supplying Automatic Sprinkler Systems

Purpose: To establish a procedure for an Engine company to supply an automatic sprinkler system Fire Department Connection (FDC).

Tactical Objective: To provide a rapid uninterrupted water supply to an automatic sprinkler system. NFPA requires a rapid uninterrupted water supply for 30 minutes from an Engine with a minimum 1,000gpm pump capacity.



Automatic sprinkler clappered siamese FDC

Procedure: For Supplying Automatic Sprinkler Systems

- ❑ Initiate a water supply from a hydrant and announce via radio
- ❑ Stop near the hydrant and lay out using a four-way hydrant valve (Humat) and a 2 ½" ¼-turn gate valve or stop near connection reverse lay two 3" inch lines from the connection to the hydrant.
- ❑ Inspect connections; break off caps, check for debris inside, and check for broken swivel.
- ❑ Take assigned fire ground position.
- ❑ Charge the connection with engine pressure of 150psi with a minimum flow of 500gpm.
- ❑ Keep Engine water tank full once hydrant water is received.

Key Operational Considerations

- ❑ Layout instructions are announced via radio to clearly identify where the supply line is being laid. Example: “Engine 11 is laying out from 8401 Georgia.”, or “Engine 181 is split laying from the driveway on Side A.”
- ❑ A single, 3-inch supply line will support 500gpm no farther than 600-feet without excessive friction loss and pump discharge pressures.
- ❑ A single, 4-inch supply line will support 800gpm no farther than 1,000-feet without excessive friction loss and pump discharge pressures.
- ❑ A successful supply to FDC may shut the water flow alarm off and drain may stop flowing water in some sprinkler systems.
- ❑ When connecting to systems with separate standpipe and sprinkler connections, consideration must be given to whether the sprinkler system protects the entire building or only an area which may not be involved in the incident. Usually, supply the sprinkler system first, then the standpipe system. This allows for some sort of suppression control while units are advancing to the fire.



Side by side automatic sprinkler system and standpipe system FDC

- ❑ If standpipe FDC swivel is broken use a double male to a double female adapter to make connections.
- ❑ Engine companies responsible for supply Automatic sprinkler connections must initiate a water supply and supply the connection. NFPA 1410 requires two 2 ½” or 3” lines to supply an automatic sprinkler connection.

Combination Automatic Sprinkler and Standpipe Systems

- ❑ Side by side or combination automatic sprinkler and standpipe systems may require more than one Engine company to supply system in larger buildings.



Combination automatic sprinkler system and standpipe system FDC

Supplying Standpipe Systems

Purpose: To establish a procedure for an Engine company to supply a standpipe Fire Department Connection (FDC) at 500gpm.

Tactical Objective: To provide an uninterrupted water supply to a standpipe system. NFPA requires a rapid uninterrupted water supply for the flow of a minimum flow of 500gpm for 30 minutes from an Engine with a minimum 1,000gpm pump capacity.



Standpipe system FDC

Back Ground: Current FRC policy and procedure identifies the deployment of at least three hand lines on IDLH fires: primary, back-up, and rapid intervention lines. Assuming that the typical MCFRS hand line is set to flow a minimum of 150gpm, then approximately, a 500gpm water supply is needed to safely support a fire attack operation in an IDLH atmosphere. A 30-minute sustained minimum flow of 500gpm from a 1,000gpm pump to a standpipe FDC is required, per NFPA 1710, to ensure that an adequate water supply is provided for fire attack operations lasting greater than a few minutes. NFPA and MFRI pump operator programs only require one 3" supply line or two 2 ½" supply lines to supply a standpipe FDC. The use of two supply lines for 2 ½" hose is to ensure the proper flow. The use of two 3" lines is not required but is a safe practice should one line break. This would ensure water supply to crews inside the building. This is one reason 4" supply line should not be used to supply a FDC. Another reason is that 4" supply line is not rated to flow high pressures needed for fire attack at upper floors of a building.

Procedure: For Supplying Standpipe Systems

- ❑ Initiate a water supply from a hydrant and announce via radio
- ❑ Stop near the hydrant and lay out using a four-way hydrant valve (Humat) and a 2 ½" ¼-turn gate valve or stop near connection reverse lay two 3" inch lines from the connection to the hydrant.
- ❑ Inspect connections; break off caps, check for debris inside, and check for broken swivel.
- ❑ Take assigned fire ground position.
- ❑ Charge the connection with engine pressure of 150psi + 5psi/floor and 200psi above the 10th floor with a minimum flow of 500gpm.
- ❑ Keep Engine water tank full once hydrant water is received.

Key Operational Considerations

- ❑ Layout instructions are announced via radio to clearly identify where the supply line is being laid. Example: "Engine 11 is laying out from 8401 Georgia.", or "Engine 181 is split laying from the driveway on Side A."
- ❑ A single, 3-inch supply line will support 500gpm no farther than 600-feet without excessive friction loss and pump discharge pressures.
- ❑ A single, 4-inch supply line will support 800gpm no farther than 1,000-feet without excessive friction loss and pump discharge pressures.
- ❑ When connecting to systems with separate standpipe and sprinkler connections, consideration must be given to whether the sprinkler system protects the entire building or only an area which may not be involved in the incident. Usually, supply the sprinkler system first, then the standpipe system. This allows for some sort of suppression control while units are advancing to the fire.
- ❑ Consider need to bypass exterior connection by supporting system from interior. Run a 3" supply line to the globe valve in the staircase used for fire attack on the ground level floor.
- ❑ If standpipe FDC swivel is seized use a double male to a double female adapter to make connections.

- ❑ If debris is stuck in FDC, it may prevent the clapper valves from closing. Supplying a globe valve in a staircase may cause water to come out of the FDC. Ensure blind caps are placed on the FDC.
- ❑ Consider using a separate Engine company to supply any one FDC connection. Failure of your pump may result in loss of water or pressure in attack lines in the building. This is an advantage for laying lines from a hydrant to a connection instead of reverse laying from a connection to a hydrant so that you can take advantage of the use of a Supply Engine. Reverse laying may provide water to a connection quicker in some situations or allow the Supply Engine to supply a FDC where multiple FDC's are found on larger buildings.

Fire Pump Test Headers

Fire Pump test headers are designed for testing the flow capabilities of a buildings fire pump. Fire pump test headers can be identified by male threads on the connections (male threads indicate water discharge) and a control valve present. **These connections do not supply the building standpipe or sprinkler systems.**

